



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

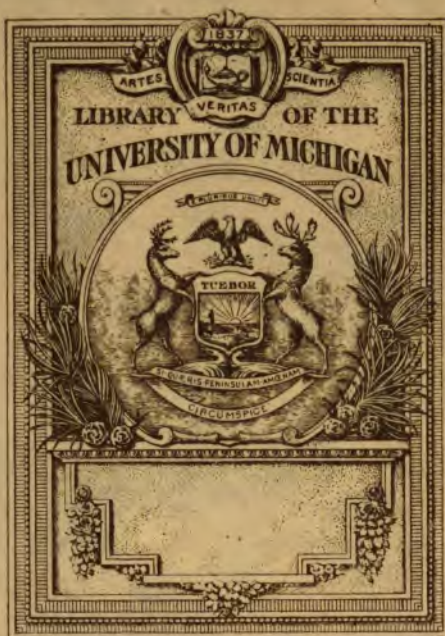
Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>



THE GIFT OF
Metropolitan Life Insurance
Company

81m
MORTALITY FROM EXTERNAL CAUSES AMONG INDUSTRIAL
POLICYHOLDERS OF THE METROPOLITAN LIFE
INSURANCE COMPANY, 1911-1914. 614.1
D81m

BY

LOUIS I. DUBLIN, PH.D.

Statistician, Metropolitan Life Insurance Company



READ AT THE FIFTH MEETING OF THE
CASUALTY ACTUARIAL AND STATISTICAL SOCIETY OF AMERICA
NEW YORK, FEBRUARY 25, 1916

Reprinted from the
PROCEEDINGS OF THE SOCIETY
Vol. II, Part II, No. 5.

20

**MORTALITY FROM EXTERNAL CAUSES AMONG INDUSTRIAL
POLICYHOLDERS OF THE METROPOLITAN LIFE
INSURANCE COMPANY, 1911-1914.**

BY

LOUIS I. DUBLIN.

The "External Causes" considered in this paper form Group XIII of the International List of Causes of Death and include Titles 155 to 186 of this list. The group is, of course, very broad; it is uniform in composition only to the extent that it represents all causal agencies other than disease and the destructive processes that go on either as a result of normal functioning or of maladjustment within the body. The causes in the group we are considering point to forces and processes which are external to the organism. We may subdivide the inclusions into three fairly homogeneous classes: first, suicides; second, homicides; and third, accidents. The last is the largest of the three and is probably of most interest to the members of this Society.

The growth of casualty insurance, the recent spread of compensation legislation, the development of the Safety First movement, the very existence of our Society all point unmistakably to the need for an accurate measure of the prevalence of the external causes of death in the community. The industrial experience of the Metropolitan Life Insurance Company for the year 1914 shows 8,245 deaths from external causes among the premium paying policyholders alone, and these formed 7.7 per cent. of the deaths from all causes. The deaths corresponded to 11,131 claims in an amount of \$1,521,873. We have not only a large number of cases in this experience but the exposure is in itself a considerable sample of the total industrial population of the United States and Canada. The ten million policyholders in the Industrial Department of the Company include men, women, and children of the working classes who are especially subject to hazards not only in their occupations but in their every-day life in urban communities. The Metropolitan does not transact an accident insurance business as such, yet its general experience provides the largest body of insurance returns on accidental deaths in the country.

I shall consider the deaths from the above causes in the four years from 1911-1914, inclusive. In all, 32,057 were recorded. Table I gives the number of deaths from the principal causes included in the group, the percentage of total deaths all causes, and the death rate per hundred thousand exposed.

TABLE I.

MORTALITY FROM EXTERNAL CAUSES. 1911-1914.

Experience of Metropolitan Life Insurance Company—Industrial Department.

Int'l List No.	Cause of Death.	Number of Deaths.	% of Total Deaths, All Causes.	Death Rates per 100,000 Living.
155-163	All external causes	32,057	7.87	94.4
164	Suicide—all forms	4,369	1.07	12.9
165	Poisoning by food	425	.10	1.3
166	Other acute poisonings	788	.19	2.3
167	Conflagration	406	.10	1.2
168	Burns (conflagration excepted)	2,996	.74	8.8
169	Absorption of deleterious gases	910	.22	2.7
170	Accidental drowning	3,616	.89	10.6
171	Traumatism by firearms	675	.17	2.0
172	Traumatism by cutting or piercing instruments	52	.01	.2
173	Traumatism by fall	4,430	1.09	13.0
174	Traumatism in mines and quarries	461	.11	1.4
175	Traumatism by machines	596	.15	1.8
	Traumatism by crushing	6,683	1.64	19.7
	175A—Steam railroad accidents and injuries	2,972	.73	8.8
	175B—Electric railroad accidents and injuries	1,129	.28	3.3
	175C—Automobile accidents and injuries	1,227	.30	3.6
	175D—Other vehicular accidents and injuries	1,084	.27	3.2
	175E—Other crushing	271	.07	.8
176	Injuries by animals	160	.04	.5
177	Starvation	10	+	+
178	Excessive cold	127	.03	.4
179	Effects of heat	920	.23	2.7
180	Lightning	67	.02	.2
181	Electricity (lightning excepted)	286	.07	.8
182-184	Homicide—all forms	2,378	.58	7.0
185	Fractures (cause not specified)	545	.13	1.6
186	Other external violence	1,157	.28	3.4

The first title in numerical importance is "traumatism by crushing." This includes the railroad, street car, automobile, and other vehicular accidents. In all 6,683 deaths are represented. Following, in the order mentioned, are "traumatism by fall," "suicide,"

"accidental drowning," "burns," and "homicides." This order of the inclusions and the death rates per hundred thousand exposed correspond fairly closely with figures for the Registration Area of the United States for the last year available, namely, 1913.

Table II presents a series of death rates per 100,000 for the external causes taken as a group, by color, sex, and age period.

TABLE II.

MORTALITY FROM EXTERNAL CAUSES CLASSIFIED BY COLOR, SEX, AND AGE PERIOD.

Death rates per 100,000 living. 1911-1914.

Experience of Metropolitan Life Insurance Company—Industrial Department.

Age Period.	Persons.	White Male.	White Female.	Colored Male.	Colored Female.
All ages.....	94.4	145.1	46.0	188.1	57.9
Under 5....	97.6	105.0	83.2	152.8	126.5
5-9.....	51.7	68.6	32.4	70.6	52.4
10-14.....	42.3	65.6	15.4	86.1	26.0
15-19.....	65.4	96.6	25.0	182.0	33.2
20-24.....	83.7	130.1	28.4	231.7	71.1
25-34.....	93.8	160.0	30.3	248.4	55.0
35-44.....	108.4	216.3	34.1	213.2	50.3
45-54.....	132.6	269.8	51.3	196.2	51.7
55-64.....	180.4	339.2	89.4	220.1	62.9
65-74.....	297.4	440.2	220.4	299.8	167.9
75 and over.	522.8	534.0	506.1	355.4	417.3

Colored males show the highest death rates, all ages combined, namely, 188.1 per hundred thousand; then follow the white males, colored females and white females in the order named. Males in both races have markedly higher death rates than females. Considering the several age periods we note a fairly high rate in the ages under five, which declines until the age period "15-19" is reached; then the rate increases regularly without break among "persons" and among white males and white females.

We shall now analyze the figures for a few of the more important conditions included under the term "external causes." There were 4,369 suicides in the four years covered. Table III presents the death rates per hundred thousand by color and sex, for the several age periods.

Suicide is a much more frequent cause of death among the whites than among the colored. White males have a death rate close to twice that of colored males at "All ages," the differences being more marked at the advanced years. It is very remarkable that the

TABLE III.

MORTALITY FROM SUICIDE CLASSIFIED BY COLOR, SEX AND AGE PERIOD.

*Death rates per 100,000 living. 1911-1914.**Experience of Metropolitan Life Insurance Company—Industrial Department.*

Age Period.	Persons.	White Male.	White Female.	Colored Male.	Colored Female.
All ages.....	12.9	21.8	6.8	11.4	5.0
Under 5.....	—	—	—	—	—
5-9.....	—	—	—	—	—
10-14.....	.5	.5	.3	1.0	.9
15-19.....	6.9	6.1	8.1	5.4	5.3
20-24.....	14.7	21.4	9.0	18.4	12.2
25-34.....	17.7	30.1	11.0	15.9	8.1
35-44.....	22.2	45.9	10.9	18.7	5.2
45-54.....	26.8	62.1	10.1	14.4	2.5
55-64.....	33.9	79.1	10.2	21.8	2.1
65-74.....	33.9	81.5	9.4	5.2	1.9
75 and over.	38.2	97.7	8.5	—	—

highest death rate from suicide occurs among white males in the age period "75 and over." Among females the death rate is always low and shows reductions at the advanced ages. Among white females the death rate is less than one tenth as high as among white males at the older ages. The maximum death rate is found in the age period "25-34." The number of cases for colored females is too small to justify comparisons; the death rate is very low, however.

Of the 4,369 deaths, 1,696 or 38.8 per cent. resulted from poisoning. This mode of suicide was most common among females, and especially among the colored females, where 67.5 per cent. of all the suicides were so effected. Firearms accounted for 22.8 per cent. of all suicides, but among the colored males the proportion rose to 37.1 per cent. The proportion of deaths from suicide varies considerably with occupation. The highest proportion is found among bakers, where 5.4 per cent. of all the deaths were from this cause.

Table IV shows the death rates per hundred thousand for homicide, all forms, arranged by color, sex and age period for the four years 1911-1914.

The death rate was highest among colored males, where the figure was 52.3. This is nearly ten times the homicide rate for white males. Colored females show a death rate of 13.5 per hundred thousand; white females a rate of only 1.9 per hundred thousand. Among white males the death rate was highest at the age period "25-34"; this was also observed among colored males, where the

TABLE IV.

MORTALITY FROM HOMICIDE CLASSIFIED BY COLOR, SEX AND AGE PERIOD.

*Death rates per 100,000 living. 1911-1914.**Experience of Metropolitan Life Insurance Company—Industrial Department.*

Age Period.	Persons.	White Male.	White Female.	Colored Male.	Colored Female.
All ages.....	7.0	5.3	1.9	52.3	13.5
Under 5.....	.5	.4	.6	1.9	—
5-9.....	.5	.5	.5	2.0	—
10-14.....	.9	.8	.6	3.3	.9
15-19.....	5.5	4.2	1.8	40.4	13.3
20-24.....	13.2	8.7	3.7	101.8	30.9
25-34.....	16.4	12.1	3.3	109.3	25.0
35-44.....	11.3	10.0	3.0	64.7	14.5
45-54.....	7.0	9.8	2.0	35.5	4.5
55-64.....	4.6	6.9	1.0	20.9	6.9
65-74.....	2.9	4.3	1.3	13.0	1.9
75 and over.	2.4	—	—	47.4	15.5

startling figure of 109.3 is found. The death rate is not much lower in the preceding age period, "20-24," for colored males, namely, 101.8 per hundred thousand.

Firearms were the commonest mode of homicide, 64.3 per cent. being so effected. The proportion among colored males was 71.6 per cent. Cutting or piercing instruments rank next in frequency as a means of injury.

We have now to consider the third and largest group of the external causes, namely, those popularly designated as "accidents." There were 25,310 such deaths in the experience of this company in the four years stated. Table V presents the death rates per hundred thousand, by color, sex and age period.

Again the highest death rate at "All ages" is found among the colored males. They are followed by the white males, the colored females and the white females in the order mentioned. In both races, the rate for males is over three times as high as for females. Considering the age periods without distinction of race and sex we find a fairly high rate in the ages under 5, namely, 97.1. The death rate declines appreciably in the next age period and remains fairly constant up to and including the age period "25-34." From this point onward the death rate rapidly rises and attains the high figure of 482.2 per hundred thousand in the age period "75 and over." It is significant that this rate is obtainable on a large exposure, the total

TABLE V.

MORTALITY FROM ACCIDENTS CLASSIFIED BY COLOR, SEX AND AGE PERIOD.

*Death rates per 100,000 living. 1911-1914.**Experience of Metropolitan Life Insurance Company—Industrial Department.*

Age Period.	Persons.	White Male.	White Female.	Colored Male.	Colored Female.
All ages.....	74.5	118.0	37.4	124.5	39.4
Under 5.....	97.1	104.6	82.6	150.8	126.5
5-9.....	51.1	68.1	31.9	68.6	52.4
10-14.....	41.0	64.3	14.5	81.8	24.1
15-19.....	53.0	86.3	15.2	136.3	14.6
20-24.....	55.7	100.0	15.8	111.5	28.0
25-34.....	59.7	117.8	16.0	123.2	22.0
35-44.....	74.9	160.3	20.2	129.7	30.6
45-54.....	98.8	197.8	39.2	146.2	44.7
55-64.....	141.9	253.1	78.2	177.4	53.9
65-74.....	260.5	354.3	209.7	281.6	164.2
75 and over.	482.2	486.3	497.6	308.0	401.9

number of deaths in this period being 594. Among white males the death rate from accidents is already high at the ages when employment begins, namely, "15-19," where it is 86.3 per hundred thousand. This rate likewise increases with advancing age. The rate for white females remains relatively low at all age periods up to and including "45-54." At the older ages the accidents become extremely frequent, and in the advanced ages "75 and over" the death rate, 497.6 per hundred thousand, is even higher than among white males.

The death rate among colored males reaches a high point earlier in life than among the whites. It is 136.3 in the age period "15-19." Strangely enough, beginning with "35-44" and continuing through the rest of life, the rate for the colored males is lower than for the white males. Nothing of especial interest is discerned in the accident rates for the colored females.

It was pointed out in Table I that the most important inclusions under the general designation "accidents" are "traumatism by crushing," "traumatism by fall," "accidental drowning" and "burns." The first of these includes railroad accidents, automobile accidents and other accidents referable to vehicles, and other forms of crushing. Table VI shows the death rates per hundred thousand by color, sex and age period for the important group of "steam railroad accidents and injuries."

The death rates are very much higher for males than for females, the differences becoming more evident during the adult years of life.